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PURCHASE DESCRIPTION

PORTABLE HYDRAULIC POWER SOURCE

NAVAL CIVIL ENGINEERING LABORATORY
Port Hueneme, California 93043

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

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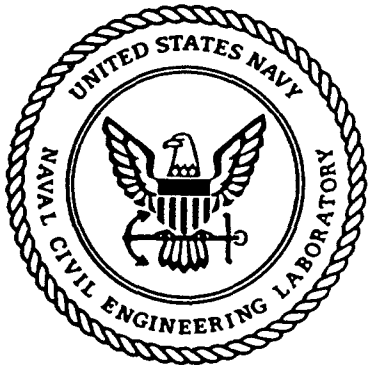

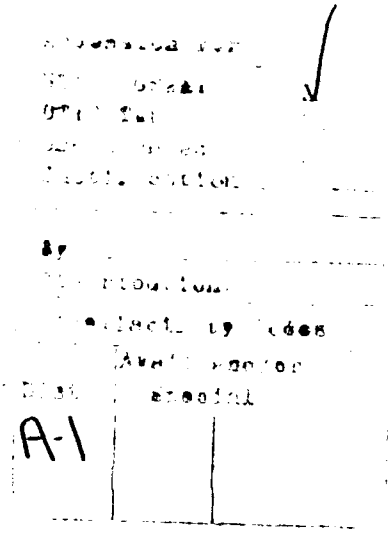

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28 SEPTEMBER 1990

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PURCHASE DESCRIPTION

PORTABLE HYDRAULIC POWER SOURCE

1. SCOPE

1.1 Scope. This purchase description establishes the requirements for the manufacture and acceptance of the Portable Hydraulic Power Source (PHPS).

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. The following specifications and standards form a part of this purchase description to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation.

SPECIFICATIONS

FEDERAL

QQ-P-35	-	Passivation Treatments for Corrosion Resistant Steel.
QQ-A-250	-	Aluminum and Aluminum Alloy Plate and Sheet; General Specifications for.

MILITARY

MIL-S-5059	-	Steel, Corrosion Resistant (18-8), Plate, Sheet, and Strip (ASG).
MIL-W-8611	-	Welding, Metal Arc and Gas, Steels, and Corrosion and Heat Resistant Alloys, Process for.
MIL-W-16878/4B	-	Wire, Electrical, PTFE Insulated, 200 Deg. C, 600 Volts, Extruded Insulation.

STANDARDS

MILITARY

MIL-STD-143 - Standards and Specifications, Order of Precedence for the Selection of.

2.1.2 Other Government documents and drawings. The following other Government documents and drawings form a part of this purchase description to the extent specified herein. Unless otherwise specified, the issues shall be those in effect on the date of the solicitation.

TECHNICAL MANUAL

Naval Civil Engineering Laboratory (NCEL)

NCEL TM 45-90-011 Portable Hydraulic Power Source; Description, Operation, and Maintenance.

DRAWINGS

Naval Civil Engineering Laboratory (NCEL)

(Eastport International/Pacific Marine Systems Div.)

5104-0100
through - Arctic Power Source.
5104-3000
(30 sheets)

(Copies of purchase descriptions, specifications, standards, drawings and other Government documents required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting activity.)

2.2 Other publications. The following documents form a part of this purchase description to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted shall be those listed in the issue of the DoDISS specified in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS shall be the issue of the non-Government documents, which are current on the date of the solicitation.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 36 - Steel, Structural.

(Application for copies of ASTM publications should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103).

2.3 Order of precedence. In the event of a conflict between the text of this purchase description and the references cited herein, the text of this purchase description shall take precedence. Nothing in this purchase description, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained. Order of precedence for specifications and standards shall be as prescribed in MIL-STD-143.

3. REQUIREMENTS

3.1 First article. The contractor shall submit a first article sample of one modularized power source unit and one portable hose reel for inspection in accordance with 4.2.1. The first article shall be manufactured using methods, material, and procedures as to those proposed for production. After approval of the first article, changes in processes or procedures shall require prior written approval from the procuring activity.

3.2 Drawings. The PHPS shall be fabricated in accordance with drawings #5104-0100 through 5104-3000, and as specified herein. No deviation from the prescribed parts list, dimensions, or tolerances is permitted without prior approval from the contracting officer. Where tolerances could cumulatively result in incorrect fits, the contractor shall provide tolerances within those prescribed on the drawings to ensure correct fit, assembly, and operation. Any data (such as shop drawings, layouts, flowsheets, and processing procedures) prepared by the contractor or obtained from a vendor to support fabrication and manufacture of the production item shall be made available, upon request, for inspection by the contracting officer or his designated representative.

3.3 Materials. Materials used shall be free from defects that would adversely affect the performance or maintainability of individual components or of the overall assembly. Materials not specified herein shall be of the same quality used for the intended purpose in commercial practice. Unless otherwise specified herein, all equipment, material, and articles incorporated in the work covered by this purchase description are to be new and fabricated using materials produced from recovered materials to the maximum extent possible without jeopardizing the intended use. The term "recovered materials" means reprocessed materials that have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials. None of the above shall be interpreted to mean that the use of used or rebuilt products is allowed under this purchase description unless otherwise specified. Materials shall conform to the requirements specified in the applicable drawings listed in

paragraphs 2.1.2 and 3.2. Aluminum alloys shall comply with QQ-A-250.

3.3.1 Electrical materials. Electrical wiring shall conform to the requirements in MIL-W-16878/4B. This type of wiring provides for protection in extremely cold climates and is essential for the proper operation of the PHPS.

3.3.2 Structural steel. Unless otherwise specified in the applicable drawings listed in paragraphs 2.1.2 and 3.2, structural steel shall be specified in ASTM A 36.

3.3.3 Stainless steel. All stainless steel shall conform to MIL-S-5059. The type of stainless shall be specified in the applicable drawings listed in paragraphs 2.1.2 and 3.2.

3.4 Standard commercial product. Where commercial products are specified, they shall, as a minimum, be in accordance with the requirements of this purchase description and shall be the manufacturer's standard commercial product. Additional or better features, which are not specifically prohibited by this purchase description but are a part of the manufacturer's standard commercial product, shall be included in the PHPS being furnished. A standard commercial product is a product that has been sold or is currently being offered for sale on the commercial market through advertisements, or manufacturer's catalogs or brochures, and represents the latest production model.

3.5 Design. The PHPS is designed to support the operation of one tool by a single diver, and to provide the tool with a minimum flow rate of 8 gallons per minute (gpm) at 2,000 pounds per square inch (psi). The components of the PHPS are contained in three main units: a two-piece modular power source unit and a portable hose reel unit. The three main modules (units) are identified as follows:

a. The power source upper module consists of an aluminum frame housing a 12-volt battery, 5-gallon hydraulic fluid reservoir, and associated hydraulic fittings and gauges.

b. The power source lower module consists of an aluminum frame housing an 18-horsepower Lombardini diesel engine, variable displacement piston pump, and associated hydraulic fittings.

c. The hose reel unit consists of a portable hose reel containing 250 feet of thermoplastic duplex hose.

3.5.1 Operation and maintenance kit. An operation and maintenance kit shall be supplied with the PHPS. The kit will contain all the items identified in the spare parts list (table 1-1), of NCEL Technical Manual, 45-90-011, Portable Hydraulic Power

Source. These spares will be provided in a carrying box made of resilient polyethylene. It will have a hinged top with a carrying handle, and be of sufficient size to hold all of the spares listed. Each of the spares shall be individually packaged and labeled.

3.5.2 Protective covers. Form-fitted heavy duty waterproof protective covers will be provided for each module of the PHPS. This includes the battery/reservoir module, engine/pump module, and portable hose reel. In addition, one cover will be provided for the battery/reservoir and engine/pump module when assembled in the operating configuration. This cover will be constructed in a manner to permit access to the major controls of the unit.

3.5.3 Manufacturer's operation and maintenance manuals. Three copies of the manufacturer's standard operation and maintenance manual will be provided for each of the following: Lombardini diesel engine and variable displacement axial piston pump.

3.6 Construction.

3.6.1 Weight. The weight of the power source upper module shall not exceed 150 pounds (with reservoir filled). The weight of the power source lower module shall not exceed 330 pounds. The weight of the portable hose reel shall not exceed 370 pounds (with hydraulic oil).

3.6.2 Dimensions. All dimensions of the PHPS shall conform to the requirements specified in the applicable drawings listed in paragraphs 2.1.2 and 3.2.

3.6.3 Interchangeability. All PHPS units furnished on this contract shall be identical to the extent necessary to ensure interchangeability of component parts, assemblies, accessories, and spare parts.

3.6.4 Finish. All finishes shall conform to the requirements specified in the applicable drawings listed in paragraphs 2.1.2 and 3.2. Passivation shall be in compliance with QQ-P-35.

3.6.5 Identification plate. Identification shall be permanently and legibly marked directly on the power source and hose reel or on a corrosion-resistant plate securely attached to the power source and hose reel at the source of manufacture. Identification shall include manufacturer's name and identification number, and the name, serial number, and the date of manufacture of the assembly. The diesel engine and pump will have the manufacturer's standard identification plate attached.

3.7 Performance characteristics. Each modular power source unit shall be subjected to the tests of 4.5 and shall meet the following requirements:

a. Provide a diver's tool with a minimum flow rate of 8 gallons per minute (gpm) at 2,000 psi in extremely cold weather environments (i.e. storage at -60°F, operation at -40°F).

b. Be mobile and self-contained. Be easily moved on ice or solid ground without the use of special handling equipment (i.e. forklift).

c. Be easily assembled in an Arctic field environment.

d. Show no evidence of leakage.

3.8 Workmanship. All parts, components, and assemblies of the modular power source unit and the portable hose reel, including machine surfaces, seals and welded parts, shall be clean and free from any defects in workmanship. External surfaces shall be free from burrs, slag, sharp edges, and corners except where sharp edges or corners are required.

3.8.1 Welding. Welding procedures shall be in accordance with MIL-W-8611. The surface of the parts to be welded shall be free from rust, scale, paint, grease, or other foreign matter. Welds shall be of sufficient size and shape to develop the full strength of the parts connected by the welds. Welds shall transmit stress without permanent deformation or failure when the parts connected by the weld are subjected to proof and service loadings.

3.8.2 Bolted connections. Bolt holes shall be accurately punched or drilled and shall have the burrs removed. Washers or lock washers shall be provided in accordance with good commercial practice, and all bolts, nuts, and screws shall be tight.

3.8.3 Metal fabrication. Metal used in the fabrication of the modular power source shall be free from kinks, ripples, and sharp bends. The straightening of material shall be done by methods that will not cause injury to the material. Methods of cutting that utilize heat shall not be used for aluminum. Sheared, chipped, and sawed edges shall be free from burrs and slivers. All bends shall be made with controlled means to ensure uniformity of size and shape. Precautions shall be taken to avoid overheating, and heated metal shall be allowed to cool slowly. Bolt holes shall be accurately punched or drilled. All burrs shall be removed.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein,

unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the purchase description where such inspections are deemed necessary to ensure that supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items must meet all requirements of section 3. The inspection set forth in this purchase description shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the purchase description shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

4.1.2 Component and material inspection. Components and materials shall be inspected in accordance with all the requirements specified herein and in applicable reference documents.

4.1.3 Test equipment and inspection facilities. The contractor shall ensure that test and inspection facilities of sufficient accuracy, quality, and quantity are established and maintained to permit performance of required inspections.

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

a. First article inspection (see 4.2.1).

b. Quality conformance inspection (see 4.2.2).

4.2.1 First-article inspection. The first-article inspection shall be performed on the modular power source unit and portable hose reel. This inspection shall include the examination of 4.3 and the tests of 4.5. The first article shall be the first production item and shall be representative of the design, construction, and manufacturing technique applicable to the remaining items to be furnished under the contract.

4.2.2 Quality conformance inspection. The quality conformance inspection shall be performed on each production unit and shall consist of the examination of 4.3 and the tests of 4.5.

4.3 Examination. Each modular power source unit and portable hose reel shall be examined for compliance with all requirements specified in section 3 of the purchase description. Any redesign or modification of the contractor's standard product to comply with specified requirements, or any necessary redesign or modification following failure to meet specified requirements, shall receive particular attention for adequacy and suitability. This element of

inspection shall encompass all visual examinations and dimensional and weight measurements.. Noncompliance with any specified requirements, or the presence of one or more defects preventing or lessening maximum efficiency, shall constitute cause for rejection. Due to the requirement for the PHPS to operate in extreme environments, special attention must be given to ensure that the components used in fabrication are identical to those called out in the drawings.

4.4 Method of inspection.

4.4.1 Weight verification. The modular power source unit and portable hose reel shall be weighed to verify compliance with 3.6.1.

4.4.2 Dimensional verification. All components shall be checked for conformance with dimensions and tolerances referred to in 3.6.2. Measurements shall be conducted using instruments capable of measurement of ±0.0001 inch. This examination shall also serve to verify compliance with 3.6.3.

4.4.3 Visual inspection. A visual inspection shall be performed for compliance with material and workmanship requirements specified in 3.3, 3.4, 3.5.1, 3.5.2, 3.5.3, 3.6.4, 3.6.5 and 3.8.

4.5 Tests. The first article and each production unit shall be tested as specified in 4.4.1 and 4.4.2. Failure to pass any phase of required tests shall be cause for the Government to refuse acceptance of all units until corrective action has been taken.

4.5.1 Test conditions. Testing shall be conducted under maximum operating requirements as well as normal operating conditions. Performance tests described in 4.4.2 will be conducted with normal operating pressures and flows.

4.5.2 Performance tests. The modular power source unit and portable hose reel shall be operated in accordance with chapter 3 of NCEL TM 45-90-011, Portable Hydraulic Power Source. The PHPS shall be operated for a period of no less than 10 minutes. During this testing period, the hydraulic power source will be connected to the portable hose reel via the umbilical assemblies. It shall provide a minimum flow rate of 8 gallons per minute (gpm) at 2000 pounds per square inch (psi). This test is performed twice within a 4-hour period. Monitor the pressure and flow rate and record any change in pressure or flow. All three preheaters (battery box, hydraulic reservoir, engine sump) shall be energized for 30 minutes. These three areas should show an increase in temperature consistent with operating performance parameters. If any requirement of 3.7 is not satisfied, then a failure has occurred, and corrective action shall be taken. If failure occurs during the performance test, then the entire test must be repeated.